The use of prophylactic antibiotics in fat grafting and their effect on graft site infection

Authors:

1. **Oliver J Smith BSc MBChB MRCS,** NIHR Academic Clinical Fellow in Plastic Surgery
2. **Ali Esmaeili MD, Clinical Fellow in Plastic Surgery**
3. **Ash Mosahebi MBBS PhD MBA FRCS(Plast), Professor of Plastic Surgery**

Affiliation: Department of Plastic Surgery, Royal Free Hospital, Pond Street, London, UK, NW3 2QG.

Corresponding Author: Professor Ash Mosahebi, Department of Plastic Surgery, Royal Free Hospital, Pond Street, London, UK, NW3 2QG. amosahebi@nhs.net**. Twitter: @LondPlasticsurg**

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Abstract

Fat grafting is an increasingly common procedure in the field of reconstructive and aesthetic surgery. However, there are no guidelines regarding the use of prophylactic antibiotics and the evidence for any benefit is extremely limited. The increasing use of prophylactic antibiotics in surgery may have consequences with regard to resistance, side effects and cost. We aimed to evaluate whether the use of prophylactic antibiotics has any effect on the incidence of graft site infections following fat grafting procedures in low risk patients. The medical records of forty female patients undergoing fat grafting procedures at the Royal Free Hospital between June 2014 and September 2015 were retrospectively analysed from a prospectively collected database. The antibiotic regimen and occurrence of graft site infection was recorded for each patient. No patients had any significant medical comorbidity that increased infection risk. There were seven different antibiotic regimens prescribed between the forty patients illustrating the wide variety in practice. A single dose at induction followed by no postoperative prophylaxis was the most common regimen (n=17). Ten patients received no antibiotics at all. There were no incidences of graft site infection over three months followup. As fat grafting is used more frequently in surgical practice it is crucial that guideline are developed to ensure its safety and efficacy. We have demonstrated that there is no correlation between antibiotic regimen and graft site infection and therefore fat grafting in low risk patients can be safely undertaken without prophylaxis.~~Introduction~~

Text

Fat grafting is a common procedure performed in our department and in all plastic surgery units for contouring and reconstruction in the breast and face. More recently fat grafting is being performed for a wide range of reasons including for lympheoma, perianal fistulas and to improve mobility in the face for patients with systemic sclerosis. Fat may also have significant regenerative potential with growing evidence for its use in wound healing (1) and scar revision (2). Graft site infection rates with this procedure are reported to be extremely

low, with a 0.6-1.1% risk reported in the procedures of the breast (3). Post-operative infections are commonly due to staphyloccocal species and often resolve with a short course of oral antibiotics (4). As well as the issues regarding side effects and cost of medications, the over-use of prophylactic antibiotics in surgical practice may be contributing to the rising problem of drug resistance (5). There are no current national guidelines which provide advice on the use of prophylactic antibiotics in fat grafting and evidence in the literature is extremely limited. Given the lack of guidelines or evidence, there is a wide variety in practice with many patients being discharged with varying regimens of prophylactic antibiotics despite the low risk of infection. We hypothesised that there would be no influence on infection rates regardless of the regimen prescribed. Our aim was to evaluate whether prophylactic antibiotics influence the risk of graft site infection in fat grafting procedures.

~~Methods~~

Female p~~P~~lastic surgery patients undergoing Coleman fat grafting between June 2014 and September 2015 were identified retrospectively on a prospectively collected database. Patients were included in the study if: they had undergone fat grafting only with no other simultaneously performed procedure, they had been followed up routinely as an outpatient for at least three months and they had no underlying comorbidity which would increase infection risk such as immunosuppression, steroid therapy or significant medical comorbidity.

For each patient the age, graft site, donor site, volume of graft and antibiotic regimen was recorded. Postoperative dressing clinic and outpatient clinic letters were viewed and the duration of follow up and mention of infection was recorded. All procedures were carried out in the Department of Plastic Surgery at the Royal Free Hospital, London. All procedures were performed under general anaesthetic in an operating theatre. In all cases a modified Klein's tumescent solution was infiltrated into the donor site and fat was harvested using a 3.5mm-wide liposuction cannula and 10cc luer lock syringes. Fat was centrifuged at 3000rpm for 3 minutes and the supernatant and infranatant were discarded. Fat was infil-

trated into the graft sites with a blunt infiltrating cannula via a stab incision using a threading technique. As the study was retrospective and reviewed previously conducted procedures that were given written consent at the time then IRB/Ethical approval was not required for the study. Patients provided consent at the time of surgery for their followup data to be retrospectively reviewed in any future studies, and the study was conducted in accordance with the Declaration of Helsinki.

~~Results~~

Demographic data for the 40 patients is shown in Table 1. All patients were followed up one week post procedure and then weekly in the plastic dressings clinic. All patients were female, the average was 54.5 years (range 18-77). The median time to outpatient appointment was 52 days (Range 26-149). Induction intravenous antibiotics were co-amoxiclav 1.2g/dose in all cases unless the patient was allergic to penicillin in which case all patients received teicoplanin 400mg/dose. Postoperative oral antibiotics were co-amoxiclav 625mg TDS (three times per day) and in penicillin allergy they were clarithromycin 500mg BD (twice per day). There was a wide range of antibiotic regimens prescribed for these patients with no consistent practice between cases as illustrated in Table 2. Of the 40 patients evaluated none developed postoperative graft site infections. Therefore the risk of infection in this population did not seem to correlate with the type of antibiotic regimen prescribed, the graft site, donor site, volume of graft or age.

~~Conclusion~~

As the use of fat grafting becomes more widespread, more clearly defined guidelines need to be developed to ensure the safety and efficacy of the procedure. Furthermore reducing the over-use of antibiotics in clinical practice is crucial in the combat against drug resistance as well as helping to prevent side effects and reducing the healthcare financial burden. We have shown that post-op graft site infection in fat grafting procedures is very

uncommon and the risk is not correlated to antibiotic regimen. Therefore in low risk patients the use of prophylactic antibiotics may not be necessary ~~although further higher level evidence is necessary to support this conclusion.~~. The conclusions of this study are limited by low patient numbers and a retrospective methodology which did not control for confounding variables. Therefore larger prospective studies are needed in order to confirm the findings and guide clinical practice.

Conflict of Interest

None of the authors have a conflict of interest to state.~~None~~

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Tables

Characteristic	Value
Age (years)	
Median	54.5
Range	18-77
Donor site	
Abdomen	29
Abdomen and flanks	4
Abdomen and thigh	2
Thigh	4
Breast	1
Graft site	
Arm	1
Breast (unilateral)	19
Breast (bilateral)	5
Face	14
Face and hands	1
Leg	1
Vagina	2
Volume of graft	
<10 ml	6
10-20 ml	9
20-50 ml	6
50-100 ml	8
>100 ml	11
Mean	71 ml

Table 1: Demographic characteristics of patients evaluated

Antibiotic regimen	Number of patients
No antibiotics given	10
No induction + 5 days oral	2

Single induction + 7 days oral	5
Single induction + 5 days oral	4
Single induction + 3 days oral	1
Single induction + no post-op antibiotics	17
Three induction + no post-op antibiotics	1

Table 2: Frequency of antibiotic regimens prescribed